CLAIMS

What is claimed is:

1. A method for applying a material between a semiconductor device having a surface and a substrate having a surface, said method comprising:

applying a wetting agent layer to one of said surface of said semiconductor device and said surface of said substrate; and

applying a flowable material between the substrate and the semiconductor device.

2. The method according to claim 1, wherein said semiconductor device attached to said substrate.

3. The method of claim 1, wherein said wetting agent layer includes a layer of silane.

4. The method according to claim 1, wherein applying said wetting agent layer comprises any one of a dispensing method, a brushing method, and a spraying method.

5. The method according to claim 1, wherein said wetting agent layer comprises at least one layer.

6. The method according to claim 1, wherein said wetting agent layer comprises one or more layers.

7. The method according to claim 1, wherein said wetting agent layer comprises a plurality of layers.

8. The method according to claim 1, wherein said wetting agent layer comprises one of glycidoxypropyltinethoxysilane and ethyltrimethoxysilane.

9. The method according to claim 1, wherein applying said wetting agent layer comprises providing a material for increasing the surface tension to one of said active surface and said top surface for the application of an underfill material.

10. A method for applying a material between a semiconductor device and a substrate, said method comprising:

providing a semiconductor device having an active surface, another surface, a first end, a second end, a first lateral side, and a second lateral side, said first end, second end, first lateral side, and second lateral side forming at least a portion of the periphery of said semiconductor device;

providing a substrate having an upper surface, a first side wall, a second side wall, a first lateral side wall and a second lateral side wall;

applying a wetting agent layer to one of said active surface of said semiconductor device and said upper surface of said substrate; and

applying a flowable material between said semiconductor device and said substrate.

11. The method according to claim 10, wherein said flowable material is applied substantially adjacent at least one end of said semiconductor device.

12. The method according to claim 10, wherein said flowable material substantially fills between said semiconductor device and said substrate.

13. The method according to claim 10, wherein said substrate includes an aperture extending through said substrate.

14. The method according to claim 13, wherein said aperture is located adjacent said another surface of said semiconductor device.

15. The method according to claim 10, wherein said flowable material is provided substantially adjacent at least a portion of the periphery of said semiconductor device to fill between said substrate and said semiconductor device.

16. The method according to claim 10, further comprising:
elevating at least said first side wall of said substrate and said first end of said semiconductor device.

17. The method according to claim 16, wherein elevating said first side wall of said substrate comprises placing said substrate on a support structure and elevating at least one portion of said support structure.

18. The method according to claim 16, further comprising:
providing a dam on the substrate adjacent to at least one of said first end, said second end, said first lateral side and said second lateral side of said semiconductor device.

19. The method according to claim 18, wherein said dam extends to substantially between said semiconductor device and said substrate.

20. The method of claim 10, further comprising:
vibrating one of said semiconductor device and said substrate.

21. The method according to claim 20, wherein said vibrating one of said semiconductor device and said substrate comprises placing said substrate on a support structure and vibrating said support structure.

22. The method according to claim 10, wherein applying said flowable material comprises:

providing said flowable material substantially adjacent said first end of said semiconductor device for filling between said substrate and said semiconductor device by one or more forces acting on said flowable material.

23. The method according to claim 10, wherein said substrate includes at least one aperture extending through said substrate and substantially located adjacent said another surface of said semiconductor device.

24. The method according to claim 23, wherein said flowable material is provided through said at least one aperture of said substrate filling substantially between said substrate and said semiconductor device.

25. The method according to claim 18, wherein applying said flowable material comprises:

providing said flowable material substantially adjacent said first end of said semiconductor device for filling between said substrate and said semiconductor device.

26. The method according to claim 18, wherein applying said flowable material comprises:

providing said flowable material substantially adjacent said first end and one of said first lateral side and said second lateral end of said semiconductor device for filling between said substrate and said semiconductor device.

27. The method according to claim 18, wherein said substrate includes at least one aperture extending therethrough and substantially located adjacent said another surface of said semiconductor device.

28. The method according to claim 27, wherein said flowable material is provided through said at least one aperture.

29. The method according to claim 28, wherein said flowable material is provided from below said substrate.

30. The method according to claim 28, wherein said flowable material is provided through said at least one aperture contacting at least a portion of said another side of said semiconductor device.

31. The method according to claim 10, wherein applying said flowable material between said semiconductor device and said substrate further comprises placing said semiconductor device and said substrate in a chamber, said chamber having an atmosphere therein having a variable pressure.

32. The method according to claim 31, further comprising:
varying the pressure of said atmosphere in said chamber for said flowable material substantially filling between said semiconductor device and said substrate.

33. A semiconductor device comprising:
a semiconductor device having an active surface, at least a portion of said active surface having a wetting agent layer thereon.

34. The semiconductor device according to claim 33, wherein said wetting agent includes silane.

35. The semiconductor device according to claim 33, wherein said wetting agent layer includes at least one layer.

36. The semiconductor device according to claim 33, wherein said wetting agent layer comprises one of glycidoxypropyltinethoxysilane and ethyltrimethoxysilane.

37. The semiconductor device according to claim 33, wherein said wetting agent layer reduces the surface tension of said active surface.

38. A semiconductor assembly comprising:

a semiconductor device having an active surface;

a substrate having an upper surface; and

a wetting agent layer provided on one of said active surface of said semiconductor device and said upper surface of said substrate.

39. The semiconductor device according to claim 38, wherein said wetting agent includes silane.

40. The semiconductor device according to claim 38, wherein said wetting agent layer includes at least one layer.

41. The semiconductor device according to claim 38, wherein said wetting agent layer comprises one of glycidoxypropyltinethoxysilane and ethyltrimethoxysilane.

42. A semiconductor assembly comprising:

a semiconductor device having an active surface;

a substrate having an upper surface;

a wetting agent located on a portion of one of said active surface of said semiconductor die and said upper surface of said substrate; and

an underfill material located between said substrate and said semiconductor device.

43. The assembly according to claim 42, wherein said wetting agent comprises silane.

44. The assembly of claim 42, wherein said wetting agent layer comprises at least one layer.

45. The assembly according to claim 42, wherein said silane layer comprises any one of glycidoxypropyltinethoxysilane and ethyltrimethoxysilane.

46. A semiconductor assembly comprising:

a semiconductor device having an active surface having at least one bond pad thereon, another surface, a first end, a second end, a first lateral side and a second lateral side;

a substrate having an upper surface having at least one circuit thereon, a first side wall, a second side wall, a first lateral side wall and a second lateral side wall;

at least one bump connecting said at least one bond pad on said active surface of said semiconductor device to said at least one circuit on said upper surface of said substrate, said at least one bump forming a gap between said semiconductor device and said substrate;

an underfill material provided between said substrate and said semiconductor device; and

a wetting agent layer provided on at least a portion of one of said active surface of said semiconductor device and said upper surface of said substrate.

49. The assembly according to claim 48, wherein said wetting agent layer comprises silane.

50. The assembly according to claim 48, wherein said underfill material substantially fills said gap between said semiconductor device and said substrate.

51. The assembly according to claim 48, said substrate further including an aperture extending therethrough.

52. The assembly according to claim 48, wherein said aperture is located adjacent another surface of said semiconductor device.

53. The assembly according to claim 48, wherein said wetting agent layer comprises one of glycidoxypropyltinethoxysilane and ethyltrimethoxysilane.

54. A semiconductor assembly comprising:

a semiconductor device having an active surface;

a substrate having an upper surface;

an underfill material provided between said substrate and said semiconductor device; and

a wetting agent layer provided on a portion of said active surface of said semiconductor device and a portion of said upper surface of said substrate.

55. The assembly according to claim 54, wherein said wetting agent layer comprises at least one layer.

56. The assembly according to claim 54, wherein said wetting agent layer comprises one of silane, glycidoxypropyltinethoxysilane and ethyltrimethoxysilane.

57. A semiconductor assembly comprising:

a semiconductor device having an active surface having a plurality of bond pads thereon;

a substrate having an upper surface having a plurality of circuits thereon;

a plurality of bumps connecting said plurality of bond pads on said active surface of said semiconductor device to said plurality of circuits on said upper surface of said

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substrate, said plurality of bumps forming a gap between said semiconductor device and said substrate;

an underfill material provided between said substrate and said semiconductor device; and

a wetting agent layer provided on of said active surface of said semiconductor device and said upper surface of said substrate.

58. The assembly according to claim 57, wherein said underfill material substantially fills said gap between said semiconductor device and said substrate.

59. The assembly according to claim 57, further comprising an aperture extending through said substrate.

60. A method for attaching a semiconductor assembly, said method comprising:

providing a semiconductor device having an active surface;

providing a substrate having an upper surface;

applying a wetting agent layer to one of said active surface of said semiconductor device and said top surface of said substrate;

connecting said semiconductor device to said substrate so that said active surface of said semiconductor device faces said top surface of said substrate; and

applying an underfill material between the substrate and the semiconductor device.

61. The method according to claim 60, wherein applying said wetting agent layer comprises any one of a dispensing method, a brushing method, and a spraying method.

62. The method according to claim 60, wherein said wetting agent layer comprises at least one layer.

63. The method according to claim 60, wherein said wetting agent layer comprises one of silance, glycidoxypropyltinethoxysilane, and ethyltrimethoxysilane.

64. A method for attaching a semiconductor assembly, said method comprising:

providing a semiconductor device having an active surface, a first end, a second end, a first lateral side end and a second lateral side end;

providing a substrate having an upper surface, a first side wall, a second side wall, a first lateral side wall and a second lateral side wall;

applying a silane layer to one of a portion of said active surface of said semiconducor device and a portion of said upper surface of said substrate;

connecting said semiconductor device to said substrate so that said active surface of said semiconductor device faces said upper surface of said substrate; and

applying an underfill material between said semiconductor device and said substrate.